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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,983	12/02/2003	Munenori Iwami	SAS2-PT063	4962

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EXAMINER	
BAUER, SCOTT ALLEN	
ART UNIT	**PAPER NUMBER**
2836	

DATE MAILED: 12/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/725,983	IWAMI ET AL.	
	Examiner	Art Unit	
	Scott Bauer	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 June 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/02/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1,2 & 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kanno et al. (US 5946184).

3. With regard to Claim 1, Kanno et al. discloses an electrostatic attracting method in which a direct-current voltage (8a & 8b) is applied to an electrode (11 & 12) disposed at a table (10) formed of a dielectric material (14) to attract/hold a substrate onto a holding surface of the table with an electrostatic force produced thereby, the method characterized by comprising: a first step of applying a voltage having a predetermined polarity to the electrode to charge the holding surface with an electric charge having a polarity different from that applied to the electrode; a second step of holding the substrate on the holding surface; (column 1 lines 14-51) and a third step of applying a voltage having a polarity different from that applied in the first step to the electrode in a state in which the substrate is held on the holding surface to produce an electric charge having the same polarity as that charged on the holding surface in the first step at the

holding surface of the table, and attracting/holding the substrate with the electric charge together with the electric charge charged on the holding surface in the first step. (column 17, lines 43-47).

The examiner notes that in the method taught by Kanno et al., the third step of reversing the polarity applied to the electrodes is preformed for the purpose of releasing the substrate. However, Kanno et al. further states that reversing the polarity of the electrodes can reproduce a residual attracting force causing the substrate to remain attached to the table (column 3 lines 10-18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kanno et al. by applying the reverse voltage during the third step for a period long enough to produce a residual charge of the opposite polarity for the purpose of reviving the required electrostatic attracting force once the substrate has become positively or negatively charged over time.

4. With regard to Claim 2, Kanno et al. discloses the electrostatic attracting method according to claim 1, characterized in that the first step is carried out under a pressure atmosphere, and charged particles exist in the pressure atmosphere (column 7, lines 54-58).

5. With regard to Claim 5, Kanno et al. teaches the electrostatic attracting method according to Claim 1. Kanno et al. further discloses a step of grounding the electrode to

discharge the electric charge accumulated in the electrode before applying voltage to the electrode (column 8 lines 41-43).

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al. (US 5,946,184) in view of Ross et al. (US 5,986,874).

7. With regard to Claim 3, Kanno et al. teaches the electrostatic attracting method according to Claim 2.

Kanno et al. does not does not teach that at least one of steam and oxygen exists in the pressure atmosphere.

Ross et al. teaches that a gas injection manifold may deliver argon and oxygen directly into a chamber (column 3 lines 54-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Kanno et al. with Ross et al. by injecting oxygen particles into the chamber for the purpose of ionizing the oxygen to remove residual surface charges located on the substrate in order to prevent particles from sticking to the substrate.

8. Claims 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno et al.

9. With regard to Claim 4, Kanno et al. teaches the electrostatic method according to Claim 1, characterized in that the third step is carried out in a reduced pressurized atmosphere wherein the process is carried out in a vacuum chamber (column 7 lines 61-63). Kanno et al. discloses all the limitations of Claim 4 except that it does not disclose that the pressure inside the chamber has an atmosphere of 80 kPa or less.

However, it has been decided that, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

10. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leeser (US 6,430,022) in view of Sato (US 5,573,981).

11. With regard to Claim 6, Leeser in figure 1, teaches an electrostatic attracting apparatus (50) which holds a substrate (130), characterized by comprising a table (100) formed by a dielectric material (column 1 lines 21-23) including a holding surface which holds the substrate by an electrostatic force, an electrode (112 & 114) disposed at the table, a direct current power supply (122) which applies a direct current voltage onto the electrode (column 1 lines 23-26).

Leeser does not teach that the apparatus comprises a switch means for switching the polarity of a direct current voltage applied to the electrode by the direct current power supply.

Sato, in Figure 1, teaches a substrate chucking apparatus comprising an electrostatic chuck forming part of a wafer support and that an electrode is disposed in the chuck (column 2 lines 7-9). Sato further teaches that the apparatus comprises a switch means (5) for switching a polarity of a direct current voltage to an electrode (2) applied by a direct current power supply (6a & 6b). Sato goes on to teach that after applying the direct-current voltage having a predetermined polarity to the electrode, the substrate is held on the holding surface, the switch means is operated to apply a direct-current voltage having a different polarity to the electrode (column 2 lines 17-43).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Leeser with Sato by using the switch means and invertible power supply of Sato in the apparatus taught by Leeser for the purpose of releasing the substrate from the chuck after the substrate has been processed as taught by Sato (column 2 line 39-43).

12. With regard to Claim 7, Leeser in view of Sato teaches the apparatus of Claim 6. Leeser further discloses that the table (100) is disposed inside a chamber (102) and that the chamber is a vacuum chamber (column 3 lines 49 & 50). A vacuum chamber would inherently contain a pressure reducing means to reduce the pressure inside the chamber.

13. With regard to Claim 8, Leeser in view of Sato teaches the electrostatic attracting apparatus according to Claim 6. Lesser, in Figure 1, further discloses that the vacuum

chamber of the apparatus is connected to a charged particle supply means (104) for supplying charged particles to the inner space.

14. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murata et al. (US 6798488) in view of Sato (US 5573981) and further in view of Kirschstein et al. (US 6,480,369).

15. With regard to Claim 9, Murata et al., in Figure 3 teaches a bonding apparatus (22) for bonding liquid crystal substrates wherein a fluid is disposed between two substrates to each other by a sealing agent (Column 1 lines 13-22). The apparatus comprises a vacuum chamber (32) in which the pressure of the chamber can be reduced by a vacuum pump (34) (column 4 lines 1-3). The apparatus further comprises two tables (46 & 52) oppositely disposed in the chamber, which are electrostatic chucks with electrodes disposed in the tables (column 4 lines 12-18). In the apparatus taught by Murata et al. a DC power supply applies a DC voltage to the electrode and produces an electrostatic force to hold the substrate on the holding surface of the table (column 4 lines 14-18). Murata et al. further teaches that the pair of tables are driven together in a vertical direction. The upper surface plate (50) moves relative to the upper housing (26) toward the lower surface plate (44) (column 5 lines 54-60).

Murata et al. does not teach that the apparatus has a switching means to switch the polarity of the electrodes or that the apparatus contains a driving means for driving the tables in the horizontal direction.

Sato, in Figure 1, teaches a substrate chucking apparatus comprising an electrostatic chuck forming part of a wafer support and that an electrode is disposed in the chuck (column 2 lines 7-9). Sato further teaches that the apparatus comprises a switch means (5) for switching a polarity of a direct current voltage to an electrode (2) applied by a direct current power supply (6a & 6b). Sato goes on to teach that after applying the direct-current voltage having a predetermined polarity to the electrode, the substrate is held on the holding surface, the switch means is operated to apply a direct-current voltage having a different polarity to the electrode (column 2 lines 17-43).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Murata et al. with Sato by powering the electrode taught by Murata et al. with the switch means and invertible power supply of Sato, for the purpose of releasing the substrate from the chuck after the substrate has been processed as taught by Sato (column 2 line 39-43).

Kirschstein et al., in Figure 1, teaches a system for receiving and retaining a substrate wherein an electrostatic chuck (1) is driven by motors and is movable in the "X & Y" directions (column 1 lines 11-15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Murata et al. with Kirschstein et al. by placing the lower electrostatic chuck (46) taught by Murata et al. on the driving supporting system taught by Kirschstein et al. for the purpose of facilitating a more precise receiving from a handling system and a better positioning and stability during the bonding process (Kirschstein column 3 lines 10-13).

16. Claims 10 & 11are rejected under 35 U.S.C. 103(a) as being unpatentable over Murata et al. (US 6,798,488) in view of Sato (US 5,573,981) and further in view of Kirschstein et al. (US 6,480,369) and Kanno et al. (US 5,946,184).

17. With regard to Claim 10, Murata et al., in view of Sato and further in view of Kirschstein et al. discloses the bonding apparatus according to Claim 9.

Murata et al. in view of Sato and further in view of Kirschstein et al. does not teach that the apparatus contains an earth device that discharges electric charges accumulated in the electrode.

Kanno et al., in Figure 1, teaches a switching means 84a & 84b wherein the electrodes (11 & 12) disposed in the electrostatic chuck (10) can be grounded to remove any residual charge on the electrodes (column 8 lines 41-46) before applying the direct current voltage having the different polarity to the electrode.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Murata et al. in view of Sato and further in view of Kirschstein et al. with Kanno et al. by placing the grounding switch taught by Kanno et al. between the power source taught by Sato and the electrodes taught by Murata et al. for the purpose of eliminating a residual charge left on the electrostatic chuck from the bonding of a previous substrate.

18. With regard to Claim 11, Murata et al. in view of Sato and further in view of Kirschstein et al. discloses the bonding apparatus according to Claim 9.

Murata et al. in view of Sato and further in view of Kirschstein et al. does not teach that the apparatus contains a gas introducing force that is formed in the holding surface.

Kanno et al. in Figure 1 discloses that the electrostatic table (10) contains an open hole (20) communicating with a gas introducing force (6) that is formed in the holding surface (column 9, lines 7-12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Murata et al. in view of Sato and further in view of Kirschstein et al. with Kanno et al. by placing the gas through-hole through the electrostatic chuck and supplying it with heat transferring gas for the purpose of reducing heat on the substrate which could cause abnormalities in the liquid crystal substrate.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kasahara (US 5,229,910) and Sherman (US 6,141,203) are considered pertinent to the applicant's disclosure.

20. Kasahara teaches a billboard device that uses an electrostatic charge to affix an advertisement to the structure of a vehicle. Kasahara teaches that a polarity reversal on the electrodes of the device will revive the required electrostatic attracting force once the advertisement has become positively or negatively charged over time (column 3 lines 13-20).

21. Sherman teaches an electrostatic chuck containing a plurality of electrodes that are supplied a DC voltage to electrostatically charge a surface. Sherman further teaches that a reverse bias can be applied to the electrodes to aid in the release of a substrate from the surface. Sherman discloses that if the voltage used is applied for too long, the substrate will re-stick and will not release.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Bauer whose telephone number is 571-272-5986. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2058. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAB

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